NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

# Scientific insights

#### ISSUE 29 | Q4 | 2023/2024

The Science Focus acknowledges NICD members of staff who have published in peer-reviewed journals. This publication is a compilation of scientific publications where an NICD staff member is either the first or last author.

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Disclaimer: Impact factor scores contained in this publication were compiled in February /March 2024.



#### **MR VUYO SABANI**

SENIOR COMMUNICATIONS MANAGER (ACTING)

#### **NICD's Year of Scientific Achievements**

We are pleased to share the latest edition of Science Focus as we showcase the National Institute for Communicable Diseases (NICD) research accomplishments. For the financial year 2023/24, NICD researchers surpassed expectations with an impressive 205 peer-reviewed publications, exceeding the target by an outstanding 35 articles. This achievement underscores the NICD researchers' unwavering dedication to shaping our understanding of critical diseases and informing effective interventions and policies to improve public health.

In this issue, we proudly acknowledge the achievements of our esteemed researchers who have earned the prestigious National Research Foundation (NRF) ratings. The NRF rating serves as a valuable instrument for assessing the calibre of NICD researchers compared to global standards. Among those recognised are Dr Jessica Coertse, Dr Shüné Oliver and Dr Mukhlid Yousif, distinguished young researchers with a Y rating, which is a testament to NICD's continuous development of scientific researchers.

This issue covers research articles for quarter four of the 2023/24 financial year. These include notable research, such as "Trends in COVID-19 admissions and deaths among people living with HIV in South Africa: analysis of national surveillance data," published in *The Lancet*. This study investigates trends in COVID-19 admissions

and factors associated with in-hospital COVID-19 mortality among people living with HIV and people without HIV.

Furthermore, we feature the study"A Prolonged Outbreak of Enteric Fever Associated with Illegal Miners in the City of Matlosana, South Africa, November 2020–September 2022," published in the *Open Forum Infectious Diseases.* This study investigates an outbreak of enteric fever cases in Matlosana to determine the magnitude and source of the outbreak following an increase in the number of enteric fever cases observed in 2021. This study highlights the value of whole genome sequencing to detect clusters and support epidemiologic investigation of enteric fever outbreaks.

We would like to congratulate our colleagues and all the researchers who contributed to this Science Focus issue for their dedication and determination to push the boundaries of scientific understanding, thereby improving public health.

As you immerse yourself in the latest scientific discoveries and accomplishments within the NICD research community, we hope you find this issue as informative as we did while putting it together.

#### On behalf of the team,

#### **Vuyo Sabani** Acting Senior Communications Manager

#### PEER REVIEWED PUBLICATION STATISTICS







**Figure 2:** The peer-reviewed publications from the 2023/24 fiscal year from Q1 through to Q4 are compared in the figure above. The yearly target of 170 publications was exceeded by 35 publications for the 2023/24 fiscal year.





#### Dolutegravir for second-line antiretroviral therapy: the beat goes on

Nosipho Shangase, Tendesayi Kufa

The Lancet Global Health

**IMPACT FACTOR: 34.3** 

https://doi.org/10.1016/S2214-109X(23)00569-7

#### ABSTRACT

Dolutegravir (DTG) has been recommended by the WHO for use in second-line antiretroviral therapy (ART) regimens since 2019. The recommendation followed the findings of the multicountry, multicentre DAWNING trial, which showed superior viral suppression and fewer adverse events with DTG compared with a boosted lopinavir (LPV)-based regimen in people living with HIV who had had virological failure on a regimen based on efavirenz (EFV) or nevirapine (NVP) and had been switched to secondline therapy. Subsequent trials of DTG for second-line therapy showed that DTG-based regimens were either superior or noninferior to protease inhibitors-based regimens, with or without testing for resistance when switching to a regimen containing or not a recycled nucleoside reverse transcriptase inhibitors (NRTI) backbone. THE LANCET Global Health



Since the non-inferiority or superiority of DTG had been analysed in clinical trial settings, Kwabena Asare and colleagues decided to investigate the effectiveness of DTG-based second-line therapy in 59 routine health-care clinics in eThekwini Metropolitan Municipality, KwaZulu-Natal, South Africa. Their study, published in The Lancet Global Health, describes retention in care and viral suppression at 12 months after switching to one of two DTGbased second-line regimens (tenofovir disoproxil fumarate [TDF]/ emtricitabine or lamivudine [XTC]/DTG or zidovudine [AZT]/XTC/ DTG) compared with an LPV-based regimen (AZT/XTC/ritonavirboosted LPV [LPV/r]) in people living with HIV who had virological failure on a non-nucleoside reverse transcriptase inhibitor (NNRTI)-based first-line regimen.



## Incidence and transmission of respiratory syncytial virus in urban and rural South Africa, 2017-2018

**Cheryl Cohen, Jackie Kleynhans, Jocelyn Moyes,** Meredith McMorrow, Florette K Treurnicht, Orienka Hellfersce, **Nicole Wolter,** Neil A Martinson, Kathleen Kahn, Limakatso Lebina, Katlego Mothlaolen, Floidy Wafawanaka, Francesc Xavier Gómez-Olivé, **Thulisa Mkhencele, Azwifarwi Mathunjwa, Maimuma Carrim,** Angela Mathee, Stuart Piketh, Brigitte Language, **Anne von Gottberg,** Stefano Tempia

# nature communications

#### **Nature Communications**

IMPACT FACTOR: 16.6

https://doi.org/10.1038/s41467-023-44275-y

#### ABSTRACT

Data on respiratory syncytial virus (RSV) incidence and household transmission are limited. To describe RSV incidence and transmission, we conducted a prospective cohort study in rural and urban communities in South Africa over two seasons during 2017-2018. Nasopharyngeal swabs were collected twice-weekly for 10 months annually and tested for RSV using PCR. We tested 81,430 samples from 1,116 participants in 225 households (follow-up 90%). 32% (359/1116) of individuals had  $\geq$ 1 RSV infection; 10% (37/359) had repeat infection during the same season, 33% (132/396) of infections were symptomatic, and 2% (9/396) sought medical care. Incidence was 47.2 infections/100 person-years and highest in children <5 years (78.3). Symptoms were

commonest in individuals aged <12 and  $\geq$ 65 years. Individuals 1-12 years accounted for 55% (134/242) of index cases. Household cumulative infection risk was 11%. On multivariable analysis, index cases with  $\geq$ 2 symptoms and shedding duration >10 days were more likely to transmit; household contacts aged 1-4 years vs.  $\geq$ 65 years were more likely to acquire infection. Within two South African communities, RSV attack rate was high, and most infections asymptomatic. Young children were more likely to introduce RSV into the home, and to be infected. Future studies should examine whether vaccines targeting children aged <12 years could reduce community transmission.



#### Trends in COVID-19 admissions and deaths among people living with HIV in South Africa: analysis of national surveillance data

Waasila Jassat, **Caroline Mudara, Lovelyn Ozougwu**, Richard Welch, **Tracy Arendse, Maureen Masha, Lucille Blumberg, Tendesayi Kufa, Adrian Puren**, Michelle Groome, **Nevashan Govender**, Pedro Pisa, Sharlene Govender, Ian Sanne, Heena Brahmbhatt, Lauren Parmley, Milani Wolmarans, Petro Rousseau, Anthony Selikow, Melissa Burgess, Lauren Hankel, Arifa Parker, **Cheryl Cohen** 





#### The Lancet HIV

**IMPACT FACTOR: 16.1** 

https://doi.org/10.1016/s2352-3018(23)00266-7

**Background:** In 2021, the HIV prevalence among South African adults was 18% and more than 2 million people had uncontrolled HIV and, therefore, had increased risk of poor outcomes with SARS-CoV-2 infection. We investigated trends in COVID-19 admissions and factors associated with in-hospital COVID-19 mortality among people living with HIV and people without HIV.

**Methods:** In this analysis of national surveillance data, we linked and analysed data collected between March 5, 2020, and May 28, 2022, from the DATCOV South African national COVID-19 hospital surveillance system, the SARS-CoV-2 case line list, and the Electronic Vaccination Data System. All analyses included patients hospitalised with SARS-CoV-2 with known in-hospital outcomes (ie, who were discharged alive or had died) at the time of data extraction. We used descriptive statistics for admissions and mortality trends. Using postimputation random-effect multivariable logistic regression models, we compared characteristics and the case fatality ratio of people with HIV and people without HIV. Using modified Poisson regression models, we compared factors associated with mortality among all people with COVID-19 admitted to hospital and factors associated with mortality among people with HIV. Findings: Among 397082 people with COVID-19 admitted to hospital, 301 407 (75.9%) were discharged alive, 89 565 (22.6%) died, and 6110 (1.5%) had no recorded outcome. 270737 (68.2%) people with COVID-19 had documented HIV status (22 858 with HIV and 247 879 without). Comparing characteristics of people without HIV and people with HIV in each COVID-19 wave, people with HIV had increased odds of mortality in the D614G (adjusted odds ratio 1.19, 95% CI 1.09–1.29), beta (1.08, 1.01–1.16), delta (1.10, 1.03–1.18), omicron BA.1 and BA.2 (1.71, 1.54–1.90), and omicron BA.4 and BA.5 (1.81, 1.41–2.33) waves. Among all COVID-19 admissions, mortality was lower among people with previous SARS-CoV-2 infection (adjusted incident rate ratio 0.32, 95% CI 0.29-0.34) and with partial (0.93, 0.90-0.96), full (0.70, 0.67-0.73), or boosted (0.50, 0.41-0.62) COVID-19 vaccination. Compared with people without HIV who were unvaccinated, people without HIV who were vaccinated had lower risk of mortality (0.68, 0.65-0.71) but people with HIV who were vaccinated did not have any difference in mortality risk (1.08, 0.96–1.23). In-hospital mortality was higher for people with HIV with CD4 counts less than 200 cells per  $\mu$ L, irrespective of viral load and vaccination status.

**Interpretation:** HIV and immunosuppression might be important risk factors for mortality as COVID-19 becomes endemic.

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Disclaimer: Impact factor scores contained in this publication were compiled in February /March 2024.



#### Evaluation of the malaria case surveillance system in KwaZulu-Natal Province, South Africa, 2022: a focus on DHIS2

Maxwell Mabona, Thembekile Zwane, Jaishree Raman, Lazarus Kuonza, Babongile Mhlongo, Poncho Phafane.

#### Malaria Journal

**IMPACT FACTOR: 5.7** 

https://doi.org/10.1186/s12936-024-04873-7

**Background:** South Africa set a target to eliminate malaria by 2023, with KwaZulu-Natal (KZN) Province the malaria-endemic province closest to achieving this goal. Objective two of the National Malaria Elimination Strategic Plan (NMESP) focused on strengthening surveillance systems to support the country's elimination efforts. Regular evaluations of the malaria surveillance systems against the targets of the NMESP objective are crucial in improving their performance and impact. This study aimed to assess whether the malaria surveillance system in KwaZulu-Natal Province meets the NMESP surveillance objective and goals.

**Methods:** A mixed-methods cross-sectional study design was used to evaluate the malaria surveillance system, focusing on the District Health Information System 2 (DHIS2). The study assessed the data quality, timeliness, simplicity, and acceptability of the system. Key personnel from KZN's Provincial malaria control programme were interviewed using self-administered questionnaires to evaluate their perception of the system's simplicity and acceptability. Malaria case data from January 2016 to December 2020 were extracted from the DHIS2 and evaluated for data quality and timeliness.

**Results:** The survey respondents generally found the DHIS2-based surveillance system acceptable (79%, 11/14) and easy to use (71%, 10/14), stating that they could readily find, extract, and share data (64%, 9/14). Overall data quality was good (88.9%), although some variables needed for case classification had low completeness and data availability. However, case notifications were not timely, with only 61% (2 622/4 329) of cases notified within 24 h of diagnosis. During the 5-year study period, the DHIS2 captured 4 333 malaria cases. The majority of cases (81%, 3 489/4 330) were categorized as imported, and predominately in males (67%, 2 914/4 333).

**Conclusion:** While the malaria surveillance system in KZN Province largely met the NMESP surveillance strategic goals, it failed to achieve the overarching surveillance objective of 100% notification of cases within 24 h of diagnosis. The majority of reported cases in KZN Province were classified as imported, emphasizing the importance of complete data for accurate case classification. Engaging with healthcare professionals responsible for case notification and disseminating aggregated data back to them is needed to encourage and improve notification timeliness.





#### A prolonged outbreak of enteric fever associated with illegal miners in the City of Matlosana, South Africa, November 2020–September 2022

**Phuti Sekwadi, Anthony Marius Smith, Wellington Maruma,** Gift Mongologa, Grace Tsele, **Mimmy Ngomane, Nomsa Tau, Shannon Williams, Bolele Disenyeng,** Mahlaku Sebiloane, **Leigh Johnston, Linda Erasmus, Juno Thomas** 

**Open Forum Infectious Diseases** 

**IMPACT FACTOR: 4.2** 

https://doi.org/10.1093/ofid/ofae118

**Background:** In South Africa, the annual incidence of enteric fever averaged 0.1 per 100 000 persons between 2003 and 2018. During 2021 an increase in the number of enteric fever cases was observed. An outbreak investigation was conducted to determine the magnitude and source of the outbreak.

**Methods:** We performed a cross-sectional descriptive study. Data were collected through telephonic or face-to-face interviews with cases or proxies via a standardized case investigation form. Whole genome sequencing was performed on all *Salmonella* Typhi isolates. Drinking water samples were collected, tested, and analyzed. Descriptive analysis was performed with Microsoft Excel.

**Results:** Between January 2020 and September 2022, a cluster of 53 genetically highly related *Salmonella* Typhi isolates was identified from 5 provinces in South Africa. Isolates associated with

the cluster showed ≤5 allelic differences, as determined following core genome multilocus sequence typing analysis. Most cases (60%, 32/53) were in the North West province. Males represented 68% (36/53). Of these, 72% (26/36) were aged 15 to 49 years, with a median age of 31 years. Where occupation was known within this age group, 78% (14/18) were illegal gold miners. Illegal miners reported illness onset while working underground. Five municipal tap water samples were tested and showed no evidence of fecal contamination.

**Open Forum** 

Infectious

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**Conclusions:** This outbreak predominantly affected illegal gold miners, likely due to the consumption of contaminated groundwater while working in a gold mine shaft. In addition, this investigation highlights the value of whole genome sequencing to detect clusters and support epidemiologic investigation of enteric fever outbreaks.



#### Factors associated with an unsuppressed viral load among HIV-positive individuals attending STI services in South Africa, 2019

Marceline Mapiye, Khuliso Ravhuhali, Alex de Voux, Tendesayi Kufa

**BMC Infectious Diseases** 

**IMPACT FACTOR: 3.7** 

https://doi.org/10.1186/s12879-023-08756-1



**Background:** Sexually transmitted infections (STIs), particularly in the absence of viral suppression, increase the risk of HIV transmission to uninfected partners. We determined factors associated with having an unsuppressed VL among HIV-positive individuals attending STI services in South Africa (SA).

**Methods:** We analysed secondary cross-sectional data collected on HIV-positive individuals presenting with STI symptoms at sentinel sites in Western Cape and Gauteng provinces between January–December 2019 in SA. We compared demographic characteristics of individuals on ART or not on ART, and a Poisson regression model to identify factors associated with having an unsuppressed VL (≥ 50 copies/ml) was used.

**Results:** Among 93 HIV-positive individuals attending STI services with VL data, the median age was 32 years (IQR 27–37).

Thirty-two (34.41%) individuals were on ART compared to 61 (65.59%) not on ART. Most of those on ART (56.25%) had an unsuppressed VL, while 86.89% of those not on ART had an unsuppressed VL. ART use was associated with a 33% lower prevalence of having unsuppressed VL. In a model adjusting for age, age at first sex and oral sex, none of the factors were significant. Among those on ART, individuals < 25 years were more likely to have an unsuppressed VL (aPRR=1.94: 95% CI=1.27–2.97) compared to those  $\geq$  25 years.

**Conclusion:** ART use among HIV-positive individuals was low and VL suppression among those on ART was sub-optimal. Intensified ART initiation and adherence support to HIV-positive individuals seeking STI services could improve VL suppression.



#### Characteristics of infections with ancestral, Beta and Delta variants of SARS-CoV-2 in the PHIRST-C community cohort study, South Africa, 2020-2021

Cheryl Cohen, Jackie Kleynhans, Anne von Gottberg, Meredith L McMorrow, Nicole Wolter, Jinal N Bhiman, Jocelyn Moyes, Mignon du Plessis, Maimuna Carrim, Amelia Buys, Niel A Martinson, Kathleen Kahn, Stephen Tollman, Limakatso Lebina, Floidy Wafawanaka, Jacques du Toit, Francesc Xavier Gómez-Olivé, Fatima S Dawood, Thulisa Mkhencele, Stefano Tempia

**BMC Infectious Diseases** 

#### IMPACT FACTOR: 3.7

https://doi.org/10.1186/s12879-024-09209-z

**Background:** Data on the characteristics of individuals with mild and asymptomatic infections with different SARS-CoV-2 variants are limited. We therefore compared the characteristics of individuals infected with ancestral, Beta and Delta SARS-CoV-2 variants in South Africa.

**Methods:** We conducted a prospective cohort study in a rural and an urban site during July 2020-August 2021. Mid-turbinate nasal swabs were collected twice-weekly from household members irrespective of symptoms and tested for SARS-CoV-2 using realtime reverse transcription polymerase chain reaction (rRT-PCR). Differences in demographic and clinical characteristics, shedding and cycle threshold (Ct) value of infection episodes by variant were evaluated using multinomial regression. Overall and agespecific incidence rates of infection were compared by variant.

**Results:** We included 1200 individuals from 222 households and 648 rRT-PCR-confirmed infection episodes (66, 10% ancestral, 260, 40% Beta, 322, 50% Delta). Symptomatic proportion was similar



for ancestral (7, 11%), Beta (44, 17%), and Delta (46, 14%) infections (p=0.4). After accounting for previous infection, peak incidence shifted to younger age groups in successive waves (40-59 years ancestral, 19-39 years Beta, 13-18 years Delta). On multivariable analysis, compared to ancestral, Beta infection was more common in individuals aged 5-12 years (vs 19-39)(adjusted odds ratio (aOR) 2.6, 95% confidence interval (Cl)1.1-6.6) and PCR cycle threshold (Ct) value <30 (vs >35)(aOR 3.2, 95%CI 1.3-7.9), while Delta was more common in individuals aged <5 (aOR 6.7, 95%CI1.4-31.2) and 5-12 years (aOR 6.6 95%CI2.6-16.7)(vs 19-39) and Ct value <30 (aOR 4.5, 95%CI 1.3-15.5) and 30-35 (aOR 6.0, 95%CI 2.3-15.7)(vs >35).

**Conclusions:** Consecutive SARS-CoV-2 waves with Beta and Delta variants were associated with a shift to younger individuals. Beta and Delta infections were associated with higher peak viral loads, potentially increasing infectiousness.

**Keywords:** Cohort study; Epidemiology; SARS-CoV-2; South Africa.



#### **Extragenital sexually transmitted infections** among high-risk men who have sex with men in Johannesburg, South Africa

Bianca Da Costa Dias, Windy Sekgele, Duduzile Nhlapo, Mahlape P Mahlangu, Johanna ME Venter, Dumisile V Maseko, Etienne E Müller, Maurice Greeves, Paul Botha, Frans Radebe, Tendesayi Kufa, Ranmini S Kularatne

**Sexually Transmitted Diseases** 

**IMPACT FACTOR: 3.1** 

https://doi.org/10.1097/olq.000000000001927

**Background:** In South Africa, extragenital etiological sexually transmitted infection (STI) screening among men who have sex with men (MSM) is not routinely available. We aimed to determine the prevalence of STI pathogens at rectal and pharyngeal sites, syphilis seroprevalence, and associated risk factors among a selection of high-risk MSM without symptomatic urethritis attending a men's health clinic in Johannesburg, South Africa.

Methods: A cross-sectional study was conducted in 2022. Enrolled clients self-reported demographic, sexual behavioral risks, and clinical information. Client or clinician-collected rectal and pharyngeal swabs were tested for Neisseria gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium, and Trichomonas vaginalis. C. trachomatis-positive rectal samples were reflex tested for lymphogranuloma venereum. Blood specimens were screened for syphilis. Univariate and multivariate regression models were used to determine factors independently associated with the presence of an extragenital STI or syphilis.

**Results:** Among the 97 participants (median age, 29 years), 24.7% had an extragenital STI and 9.4% had high nontreponemal antibody titers (rapid plasma reagin ≥1:16). Rectal STIs were detected in 26.4% participants: N. gonorrhoeae (14.3%), C. trachomatis (9.9%), and M. genitalium (5.5%). Pharyngeal STIs were less prevalent (4.1%). Overall, the prevalence of any STI was 41%. Sex under the influence of drugs (adjusted odds ratio, 4.94; 95% confidence interval, 1.56–15.69) and engaging in condomless receptive anal intercourse with a casual partner (adjusted odds ratio, 8.36; 95% confidence interval, 1.73-40.28) were independent risk factors for having an extragenital STI.

**Conclusions:** The high burden of extragenital STIs and active syphilis in asymptomatic MSM underscores the importance of routine etiological screening in this key population, as the syndromic approach would not enable detection or treatment of these infections.





#### Remembering Professor Peter A. Leggat, AM, ADC (1961-2023)

Colleen Lau, John Frean

#### **Tropical Medicine and Infectious Disease**

**IMPACT FACTOR: 2.9** 

https://doi.org/10.3390/tropicalmed9020028

#### ABSTRACT

Professor Peter Leggat, the Immediate Past President of the Australasian College of Tropical Medicine (ACTM), passed away peacefully in Brisbane 20 September 2023. Peter was a much respected and beloved friend and colleague in the world of travel medicine and tropical medicine and one of Australia's greatest contributors to these fields. He was also a wonderfully supportive and inspirational mentor for many in Australia and around the world. Always a gentleman, Peter's quiet wisdom and calm guidance will be sorely missed by so many of us. Peter was a medical doctor, scholar, teacher, enabler, innovator, and most of all, a great leader. He had many talents, skills, areas of expertise, and countless accolades. As a Founding Fellow of the ACTM in 1991, Peter contributed enormously to the college over many decades. He served five terms as President of the ACTM (1996-1998, 2002-2004, 2006-2008, 2016-2018, and 2020-2022) and held executive positions as Honorary Secretary, Honorary Treasurer, and Dean of the ACTM Faculty of Travel Medicine. In 2016, he was instrumental in establishing the ACTM's peer-reviewed journal, Tropical Medicine and Infectious Disease, and as Deputy Editor-in-Chief led the journal to achieve its first impact factor, an impressive 3.711. Peter served as a Guest Editor for two Special Issues on COVID-19 that were later published in book form (Peter A. Leggat, John Frean, and Lucille Blumberg, Eds. COVID-19: Current Challenges and Future Perspectives. 2022. MDPI, Basel, Switzerland; Peter A. Leggat, John Frean, and Lucille Blumberg, Eds. COVID-19: Current Status and Future Prospects. March 2023. MDPI, Basel, Switzerland) and was a Guest Editor for the Special Issue in which this tribute appears. After over 30 years of service at James Cook University (JCU), including many leadership roles.



Peter recently retired as Professor Emeritus and Director Emeritus of the World Health Organization Collaborating Centre for Vector-borne and Neglected Tropical Diseases at JCU. As an academic researcher, Peter published over 500 journal papers (with over 9000 citations), more than 100 book chapters, and 30 books and presented more than 400 papers at national and international conferences. In addition to his leadership roles at the ACTM and JCU, he was the Immediate Past President of the International Society of Travel Medicine, a member of the Australasian Public Health Medicine Council, a member of the Expanded Board of the International Fed eration for Tropical Medicine, Dean of Education for the Australasian College of Aerospace Medicine, Director of the World Safety Organization Collaborating Centre for Aerospace and Travel Health Safety, Distinguished International Fellow of the American Society of Tropical Medicine and Hygiene, and a Fulbright Alumni Adviser to the Australian–American Fulbright Commission. Peter was also a Medical Officer in the Australian Army, a Colonel in the Australian Defence Force, and an Honorary Aide-de-Camp to the Governor General of Australia. Despite so many impressive achievements in such diverse fields, Peter was always unassuming, humble, gracious, congenial, and ready to share his wisdom. Peter's exceptional service to the community was recognised by many highly prestigious awards. In 2013, Peter was very deservedly recognised as a Member of the General Division of the Order of Australia (AM) for his significant service to medicine as a specialist in the fields of tropical and travel medicine. Later, in 2021, Peter was honoured as a Knight of Grace of the Order of St John and presented with the corresponding award at Government House in Canberra.



#### Retrospective review of maternal HIV viral load electronic gatekeeping codes in South Africa

Siphesihle K Mahanjana, Tladi Ledibane, Gayle G Sherman, Tanya Y Murray, Ahmad FH Mazanderani

#### Southern African Journal of HIV Medicine

IMPACT FACTOR: 1.7

https://doi.org/10.4102/sajhivmed.v25i1.1539

**Background:** Maternal electronic gatekeeping (eGK) codes for HIV viral load (VL) testing of pregnant and breastfeeding women were developed to permit increased frequency of maternal HIV VL testing without automated gatekeeping cancellation, and to enable virological surveillance.

**Objectives:** This study describes the national uptake of maternal eGK codes and VL suppression (VLS) rates disaggregated by age during antenatal, delivery and postnatal periods in South Africa during 2022.

**Method:** HIV VL tests associated with C#PMTCT (used for antenatal and postnatal testing) and C#DELIVERY (used at delivery) eGK codes between 01 January and 31 December 2022, were extracted from the National Institute for Communicable Diseases Data Warehouse. Uptake of eGK codes was calculated using indicators from the District Health Information System as denominators while



HIV VLS rates (< 1000 copies/mL) were calculated as monthly and annual percentages.

**Results:** Overall, national maternal eGK code uptake was 41.8%, 24.5% and 0.12% for the antenatal, delivery and postnatal periods, respectively. The monthly antenatal eGK uptake increased from 27.5% to 58.5% while delivery uptake increased from 17.3% to 30.0%. The overall annual maternal HIV VLS rate was 86.7% antenatally and 87.2% during delivery. The monthly average HIV VLS for adolescent girls and young women (AGYW) was 76.1% antenatally and 79.6% during delivery.

**Conclusion:** Although overall national uptake of maternal HIV VL eGK codes was low, antenatal and delivery uptake improved over time, thereby facilitating use of eGK codes for programmatic monitoring of maternal VLS rates for the first time. Quality of care among pregnant AGYW requires urgent attention.

**Keywords:** maternal HIV; electronic gatekeeping codes; viral load; surveillance; vertical transmission prevention.



#### Sentinel syndromic diarrhoeal disease surveillance, South Africa 2022

Nicola Page, Sandrama Nadan, Tersia Kruger, Rembuluwani Netshikweta, Phuti Sekwadi, Linda Erasmus

#### **Public Health Bulletin South Africa**

**IMPACT FACTOR: N/A** 

https://www.phbsa.ac.za/diarrhoeal-disease-surveillance-2022/

#### ABSTRACT

The diarrhoeal diseases sentinel syndromic surveillance conducted in eight hospital and clinic sites in five provinces in 2022 screened 624 cases, the majority (79%; 496/624) of whom were children ≤5 years. Enteric pathogens were detected in 75% (467/624) of stools screened. The predominant enteric pathogens in children ≤5 years included adenovirus (26%; 127/496), rotavirus (23%; 115/496), Shigella spp. (20%; 97/495), andv Cryptosporidium spp. (19%; 94/496). In children with vaccination cards, 78% (364/467) were fully vaccinated against rotavirus and 93% (433/467) had received at least one dose of the rotavirus vaccine. In participants >5 years, Shigella spp. were detected in 20% (26/128) of cases, with adenovirus in 10% (13/128) and norovirus GII in 7% (9/128). The 2022 diarrhoeal surveillance indicates that rotavirus is still a common cause of diarrhoea in children  $\leq$ 5 years albeit at lower levels compared to pre-vaccine years. The detection of rotavirus in fully vaccinated children is not unexpected as the vaccine combats severe disease but does not prevent infection. High coverage (2 doses) of current vaccine and improved rotavirus vaccines are needed to address the remaining burden. In addition, the surveillance showed the importance of Shigella spp. in diarrhoeal disease burden in all ages.

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